Hassan Chowdhry

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Education

Dalhousie University **Sep 2022 – May 2027**

Bachelor of Computer Science (BCS) *GPA: 4.24/4.3*

- **Relevant Coursework:** Machine Learning, Operating Systems, Software Engineering, Data Structures & Algorithm, Cybersecurity, Advanced Networks, Databases

Work Experience

Software Engineer Intern **Jan 2026 – Present**

Activision Blizzard *Vancouver, BC*

- Architected and Engineered scalable, fault-tolerant microservices in Golang and Python for Call of Duty's backend infrastructure, supporting 100M+ monthly active players across global distributed systems.
- Designed and optimized data pipelines with Kafka, Flink, and Spark, enabling real-time telemetry and analytics for of 500k+ concurrent players worldwide.
- Developed and automated Kubernetes deployments, achieving zero-downtime rollouts and enhancing service reliability across multi-datacenter clusters.
- Collaborated with cross-functional Microsoft, Activision, Blizzard and Demonware teams under Agile/Scrum workflows to deliver secure, scalable multiplayer systems.

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- Collaborated with cross-functional Microsoft, Activision, Blizzard and Demonware teams under Agile/Scrum workflows to deliver secure, scalable multiplayer systems.

AI Researcher **Jan 2026 – Present**

HyperMatrix Lab *Halifax, NS*

- Researched Generative AI safety for ML NLP, achieving 2+ leading publications by fine-tuning multiple GPU- trained LLMs, utilizing Python PyTorch, TensorFlow, and OpenAI API.
- Engineered a Multi-Agent RAG System, that delivered 92% accuracy on break point retrieval with PostgreSQL, LangChain, BigQuery, and Vertex AI.
- Architected a Flask back-end that enabled 25+ Prompt Engineering experiments with Hugging Face Datasets for GPT-based Transformers, improving model alignment across multiple research studies.

Instructor **Oct 2025 – Dec 2025**

Shiftkey Labs *Halifax, NS*

- Researched Generative AI safety for ML NLP, achieving 2+ leading publications by fine-tuning multiple GPU- trained LLMs, utilizing Python PyTorch, TensorFlow, and OpenAI API.
- Engineered a Multi-Agent RAG System, that delivered 92% accuracy on break point retrieval with PostgreSQL, LangChain, FastAPI/MCP, BigQuery, and Vertex AI.
- Architected a Flask back-end that enabled 25+ Prompt Engineering experiments with Hugging Face Datasets for GPT-based Transformers, improving model alignment across multiple research studies.

Undergraduate Researcher **May 2025 – Dec 2025**

Dalhousie University *Halifax, NS*

- Engineered Agentic AI cyber defense agents using PyTorch and LangChain, improving intrusion detection and prevention accuracy in simulated cybersecurity environments.
- Owned the design and deployment of LangGraph LLM agents for transparent cyber defense, explaining mitigation actions in natural language and driving hybrid LLM and RL research.

Software Engineer Intern **Jan 2025 – May 2025**

Synopsys *Waterloo, ON*

- Spearheaded a 50+ Cypress E2E test suite for Ansys Fluids with CI on Kubernetes, surfacing 10+ critical UI defects and cutting regression time 15%.
- Enhanced enterprise-scale simulation workflows by standardizing a React and JavaScript frontend with FastAPI microservices and Docker environment, boosting user efficiency 25% and reducing setup time 15%.

Software Engineer Intern **May 2024 – Aug 2024**

BOTR Solutions *Vancouver, BC*

- Reduced deployment time by 60% by automating CI/CD pipelines with AWS, ensuring scalable and reliable delivery.
- Accelerated feature development by 30% by designing and implementing comprehensive E2E backend systems for REST APIs using Django and PostgreSQL, reducing integration time and improving system reliability.
- Engineered a Python ETL pipeline for accurate, scalable patient-data migration, cutting costs 20% and boosting efficiency by 35%.

Head Teaching Assistant **Sep 2023 – Dec 2025**

Dalhousie University *Halifax, NS*

- Courses: Server-Side Development.
- Led and mentored 10 TAs to deliver high-quality lab sessions for 150+ students by orchestrating weekly coordination meetings and providing targeted guidance on technical and instructional challenges.
- Led weekly labs for 150+ students, reinforcing Data structures & Algorithms and full-stack concepts with Java, PHP, Node.js, and Express through guided, hands-on projects.

Undergraduate Teaching Assistant **Sep 2023 – Dec 2025**

Dalhousie University *Halifax, NS*

- Courses: Data Structures & Algorithms, Server-Side Development, Robotics, Web Development.
- Led and mentored 10 TAs to deliver high-quality lab sessions for 150+ students by orchestrating weekly coordination meetings and providing targeted guidance on technical and instructional challenges.
- Led weekly labs for 150+ students, reinforcing Data structures & Algorithms and full-stack concepts with Java, PHP, Node.js, and Express through guided, hands-on projects.

Publications

(IDEAL 2025) Evaluating AI Agents for Cyber Defense: A Comparison of Deep Reinforcement Learning and LLM Approaches, International Conference on Intelligent Data Engineering and Automated Learning, **H. Chowdhry**, J. Manero, and S. Sampalli

Leadership, Honors & Certifications

Gold Medal in the 2025 ICPC Canada Atlantic Contest

Third Place in the 2025 ICPC NENA Atlantic Region

Amazon Web Services (AWS) Solutions Architect – Associate

Amazon Web Services (AWS) AI Practitioner

Co-Founder & Vice President – Dalhousie CSL

President – Dalhousie MSA

Projects

NeuroCode AI | *GitHub* **Golang | Next.js**

- Accelerated historical research by utilizing AI-driven data analysis using RAG and prompt engineering, allowing researchers to gain insights into trends from the Old Bailey dataset in a fraction of the time.

Open LLM (Open-Source Contribution) | *GitHub* **React | Python | vLLM**

- Accelerated historical research by utilizing AI-driven data analysis using RAG and prompt engineering, allowing researchers to gain insights into trends from the Old Bailey dataset in a fraction of the time.

OldBailey AI | *GitHub* **Next.js | Flask | AWS | TypeScript**

- Architected a LLM persona chat (judge/defendant/historian) trained over 2,500+ records, enabling natural language interrogation and richer, seminar-grade insights.
- Accelerated historical research by utilizing AI-driven data analysis using RAG and prompt engineering, allowing researchers to gain insights into trends from the Old Bailey dataset in a fraction of the time.

Technical Skills

Languages: Python, JavaScript, TypeScript, Java, Go, C, C++, C#, PHP, SQL, GraphQL, HTML5, CSS

Libraries/Frameworks: React, Next.js, Spring Boot, Flask, FastAPI, Node.js, Express.js, Django, Kafka, Flink, Spark

Machine Learning: PyTorch, TensorFlow, scikit-learn, NumPy, RLlib/Ray, Stable Baselines3, OpenAI Gym/Gymnasium, LangChain, LangGraph

DevOps/Cloud: Kubernetes, Docker, Terraform, AWS, GCP, Azure, GitHub Actions, Cypress, JUnit, Jest, PyTest, Jenkins

Developer Tools: Git, Android Studio, Linux, MySQL, PostgreSQL, MongoDB, Redis, Hugging Face, Postman, Jira, Grafana, Prometheus, Thanos, Ollama, vLLM